

Claims

We claim:

1 1. An electronic structure, comprising:

2 a metallic plate;

3 a mineral layer bonded to the metallic plate; and

4 an adhesion promoter layer bonded to the mineral layer.

1 2. The structure of claim 1, wherein the mineral layer includes a mineral selected from the group
2 consisting of silicon dioxide, silicon nitride, and silicon carbide.

1 3. The structure of claim 1, wherein the mineral layer has a thickness between about 50
2 angstroms and about 2000 angstroms.

1 4. The structure of claim 1, wherein the metallic plate includes a metallic substance selected from
2 the group consisting of stainless steel, aluminum, titanium, copper, copper coated with nickel,
3 and copper coated with chrome.

1 5. The structure of claim 1, wherein the adhesion promoter layer includes an adhesion promoter
2 selected from the group consisting of a silane, a titanate, a zirconate, and an aluminate.

1 6. The structure of claim 1, wherein the adhesion promoter layer includes a silane selected from
2 the group consisting of 3-glycidoxypropyltrimethoxysilane, 3-glycidoxypropyltriethoxysilane, 3-
3 (2-aminoethyl)propyltrimethoxysilane, and 3-(2-aminoethyl)propyltriethoxysilane.

1 7. The structure of claim 1, further comprising:

2 an electronic carrier;

3 an electronic assembly coupled to the electronic carrier; and

4 an adhesive structure bonded to the adhesion promoter layer, wherein the adhesive

5 structure adhesively couples the metallic plate to the electronic assembly, and wherein the

6 adhesive structure adhesively couples the metallic plate to the electronic carrier.

1 8. The structure of claim 7, wherein the adhesive structure includes a structural epoxy adhesive.

1 9. The structure of claim 7, wherein a coefficient of thermal expansion (CTE) of the metallic

2 plate exceeds a CTE of the electronic assembly.

1 10. A method for forming an electronic structure, comprising:

2 providing a metallic plate;

3 forming a mineral layer on the metallic plate; and

4 forming an adhesion promoter layer on the mineral layer.

1 11. The method of claim 10, wherein the step of forming a mineral layer includes selecting a

2 mineral from the group consisting of silicon dioxide, silicon nitride, and silicon carbide.

1 12. The method of claim 10, wherein the step of forming a mineral layer includes forming a

2 mineral layer having a thickness between about 50 angstroms and about 2000 angstroms.

1 13. The method of claim 10, wherein the step of forming a mineral layer includes sputtering a

2 mineral layer on the clean surface of the metallic plate.

1 14. The method of claim 10, wherein the providing step includes selecting a metallic substance

2 from the group consisting of stainless steel, aluminum, titanium, copper, copper coated with

3 nickel, and copper coated with chrome.

1 15. The method of claim 10, wherein the step of forming an adhesion promoter layer includes

2 selecting an adhesion promoter from the group consisting of a silane, a titanate, a zirconate, and

3 an aluminate.

1 16. The method of claim 10, wherein the step of forming an adhesion promoter layer includes
2 selecting a silane from the group consisting of 3-glycidoxypropyltrimethoxysilane, 3-
3 glycidoxypropyltriethoxysilane, 3-(2-aminoethyl)propyltrimethoxysilane, and 3-(2-
4 aminoethyl)propyltrimethoxysilane.

1 17. The method of claim 10, further comprising:

2 providing an electronic assembly;

3 providing an adhesive material;

4 coupling the metallic plate to the electronic assembly by interfacing the adhesive material
5 between the adhesion promoter layer and the electronic assembly;

6 providing an electronic carrier;

7 coupling the electronic assembly to the electronic carrier; and

8 coupling the metallic plate to the electronic carrier by interfacing the adhesive material
9 between the adhesion promoter layer and the electronic carrier.

1 18. The method of claim 17, wherein the step of providing an adhesive material includes

2 providing a structural epoxy adhesive.

1 19. The method of claim 17, wherein the step of providing a metallic plate includes providing a
2 metallic plate having a coefficient of thermal expansion (CTE) that exceeds a CTE of the
3 electronic assembly.